REMARKS

Claims 3, 6, 9 and 12 have been rewritten into independent form. Claims 1, 2, 4, 5, 7, 8, 10 and 11 are canceled without prejudice to or disclaimer of the subject matter found therein, and claims 13-16 are added.

In paragraph 2, on page 2 of the Office Action, claims 1, 2, 4, 5, 7, 8, 10 and 11 were rejected under 35 U.S.C. §102(e) as being anticipated by Aoki et al., U.S. Patent No. 6,587,315. The rejection has been rendered moot by the cancellation of all claims rejected.

In paragraph 4, on page 3 of the Office Action, claims 3, 6, 9 and 12 were rejected under 35 U.S.C. §103(a) as being unpatentable over Aoki et al. (hereinafter "Aoki"). The rejection is respectfully traversed.

All of Applicants' independent claims call for a total length of regions of the two electrode layers that are overlayed over one of the surfaces of the magnetoresistive element is greater than 0 and smaller than 0.3 μm and a space between the two electrode layers is greater than 0 and equal to or smaller than approximately 0.6 μm. The first feature improves the sensistivy, output, and output stability of the magneto-resistive device, or the thin-film magnetic head, and makes it possible to determine the effective read track width with accuracy. A detailed discussion of this benefit is found on pages 21-26 of the specification.

The second feature reduces Barkhausen noise significantly as is shown in Applicants' Fig. 16 and described in the specification of pages 28-30. Thus, the second feature enhances the effect of improving the output stability of the magnetoresistive device, or thin-film magnetic head, among the effects obtained by the first feature. Both a combination of the two features, and the second feature, in particular, is not disclosed by Aoki. Further, Applicants' discussion with respect to Fig. 16 in the specification at pages 28-30 show the unexpected results of the invention that are obtained over device such as that of Aoki.

Aoki discloses for each embodiment an electrode overlayed over an insensitive region D on each side of the magnetic of the multilayer film. Aoki specifically says that the electrode should not extend into the sensitive area E. If the electrodes totally cover the insensitive regions D, then the magnetic read track width M – Tw is equal to the optical read track width 0 – Tw. However, it is not necessary, according to Aoki, that the electrodes totally cover the insensitive regions D of each of their embodiments. They then point out that the width dimension for their embodiments is preferably in a range from 0 μm to 0.08 μm and more preferably within a range of from 0.05 μm to 0.08 μm (See, for example, col. 18, lines 31-40; col. 19, lines 37-47).

However, for none of the embodiments does Aoki address the separation between the electrode layers. When Aoki addresses noise, it discusses two factors that affect noise. The first is limiting the electrode layers to extending over the insensitive regions D thereby controlling the generation of noise. The second is controlling the angle between the top surface of the multi-layer film and the end face of the electrode layer to be 20° or greater and preferably 25° or greater to prevent the sense current from shunting into the insensitive region which again controls generation of noise (See, for example, col. 37, lines 39-58). They also address the issue of having this angle between the top surface of the multi-layer film and the end face of the electrodes as being too large and indicate that it is preferably 60° or smaller and more preferably 45° or smaller to prevent a short between the electrode layer and the top layer shield layer when a top shield layer is deposited over the protective layer (col. 19, lines 11-18). Nowhere, however, do they address the separation between the electrodes.

In fact, in one sense, they might be considered as teaching away from controlling that distance as they teach if you widen the top layer of the multi-layer film you widen the sensitive region (col. 19, lines 58-63).

Thus, there is nothing in Aoki that would suggest Applicants' claimed invention, particularly the combination of features discussed above as Aoki addresses noise in a different manner and nowhere appears to understand the criticality of the spacing between the overlying electrode layers as it relates to reducing Barkhausen noise. Although the Office Action alleges that such would be routine engineering experimentation and optimization, such is not the case if one does not recognize the problem or the parameters of the problem. When one opts for a different solution for controlling noise and nowhere indicates any understanding of a relationship of the separation between the electrodes then one cannot conduct any experimentation or optimization in that particular area. So, clearly, it is not routine.

In view of the foregoing amendments and remarks, Applicants respectfully submit that this application is in condition for allowance. Favorable consideration and prompt allowance of claims 3, 6, 9 and 12-16 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in better condition for allowance, the Examiner is invited to contact Applicants' undersigned representative at the telephone number listed below.

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